

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 August 2000 (31.08.2000)

PCT

(10) International Publication Number
WO 00/50620 A3

(51) International Patent Classification⁷: C07K 14/52,
C12N 5/10, 5/16, 15/12, 15/19, 15/63, A61K 38/19, 38/16

(21) International Application Number: PCT/US00/04722

(22) International Filing Date: 25 February 2000 (25.02.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/122,099 26 February 1999 (26.02.1999) US
60/136,788 28 May 1999 (28.05.1999) US

(71) Applicant (for all designated States except US): HUMAN
GENOME SCIENCES, INC. [US/US]; 9410 Key West
Avenue, Rockville, MD 20850 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): YU, Guo-Liang
[CN/US]; 242 Gravatt Drive, Berkeley, CA 94705 (US).
NI, Jian [CN/US]; 5502 Manorfield Road, Rockville, MD
20853 (US). ROSEN, Craig, A. [US/US]; 22400 Rolling
Hill Road, Laytonsville, MD 20882 (US).

(74) Agents: STEFFE, Eric, K. et al.; Sterne, Kessler, Gold-
stein & Fox P.L.L.C., Suite 600, 1100 New York Avenue,
N.W., Washington, DC 20005-3934 (US).

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ,
BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,
DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,
UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent
(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent
(AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,
MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

(88) Date of publication of the international search report:
30 November 2000

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: HUMAN ENDOKINE ALPHA AND METHODS OF USE

(57) Abstract: The present invention concerns a novel member of the tumor necrosis factor (TNF) family of cytokines. In particular, isolated nucleic acid molecules are provided encoding the endokine alpha protein. Endokine alpha polypeptides are also provided, as are vectors, host cells and recombinant methods for producing the same. Also provided are diagnostic and therapeutic methods concerning TNF family-related disorders.

WO 00/50620 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/04722

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 19
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-16

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/04722

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7):

C07K 14/52; C12N 5/10, 5/16, 15/12, 15/19, 15/63; A61K 38/19, 38/16

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

530/350,351; 424/85.1; 536/23.1, 23.5, 24.3, 24.31; 435/ 69.1, 69.5, 71.1, 71.2, 471, 325, 252.3, 254.11, 320.2

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

WEST, CAS ONLINE, MEDLINE, CAPLUS, BIOSIS, EMBASE
search terms: endokine-alpha polypeptide, DNA, nucleic acid, polynucleotide, recombinant, method of producing, therapy, administer, treatment.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claims 1-16, drawn to a nucleic acid encoding human endokine alpha, a vector, a host cell, a method for making recombinant endokine alpha, endokine alpha polypeptide and a method of treatment by administering endokine alpha polypeptide.

Group II, claim 17, drawn to an antibody that binds endokine alpha polypeptide.

Group III, claim 18, drawn to a method of treatment with an antibody that binds endokine alpha polypeptide.

Group IV, claim 20, drawn to a method of treatment by administering an endokine-alpha antagonist.

The inventions listed as Groups I-IV do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Pursuant to 37 C.F.R. § 1.475 (d), the ISA/US considers that where multiple products and processes are claimed, the main invention shall consist of the first invention of the category first mentioned in the claims and the first recited invention of each of the other categories related thereto. Accordingly, the main invention (Group I) comprises the first-recited product, a nucleic acid encoding human endokine alpha, a vector, a host cell, a method for making recombinant endokine alpha, endokine alpha polypeptide and a method of treatment by administering endokine alpha polypeptide. Further pursuant to 37 C.F.R. § 1.475 (d), the ISA/US considers that any feature which the subsequently recited products and methods share with the main invention does not constitute a special technical feature within the meaning of PCT Rule 13.2 and that each of such products and methods accordingly defines a separate invention.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/04722

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :Please See Extra Sheet.

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/350,351; 424/85.1; 536/23.1, 23.5, 24.3, 24.31; 435/ 69.1, 69.5, 71.1, 71.2, 471, 325, 252.3, 254.11, 320.2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98/07880 A1 (HUMAN GENOME SCIENCES, INC.) 26 February 1998 (26/02/98), see entire document.	1-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

08 MAY 2000

Date of mailing of the international search report

17 AUG 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer *my means*
PREMA MERTZ

Telephone No. (703) 308-0196